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UNITED STATES PATENT APPLICATION

of

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for

LOAD BEARING SHOULDER FRAME ASSEMBLY

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1. **Related Applications**

This application claims priority to and is a continuation-in-part of U.S. Patent Application No. 10/289,722, filed November 7, 2002, entitled, "Load bearing device for a Cartable Item Providing Single to Dual-Shoulder Support Transitioning."

2. **Field of the Invention**

The present invention relates to load bearing devices for facilitating manual transport of a load. Particularly, the present invention relates to a load bearing device for substantially evenly distributing the weight of a load over the back and shoulders of a user.

3. **Background**

Golf is one of the most widely enjoyed sports activities in the world, and has strong support at both the recreational and professional levels. While golf has always been a popular game for both novices and professionals, the popularity of the game has exploded in recent years. Record numbers are flocking to beautiful courses worldwide to try their hand at the seemingly arduous task of putting a little white ball in a four inch hole located hundreds of yards away in as few shots as possible.

During play, golfers must transport several different clubs, balls, tees, and other accessories a considerable distance. As a result, a golf bag has become an indispensable part of any golfer's inventory. Despite the availability of golf carts to transport a golf bag, many golfers prefer to walk a golf course and either carry their own golf bag or employ a caddy to do so.

One of the drawbacks to carrying a golf bag over a golf course is the standard construction of a golf bag. Traditionally designed golf bags are manufactured to implement very simple carrying systems designed only to enable a golfer or caddy to carry the golf bag, which houses both clubs and balls. A typical golf bag comprises a tubular carrying member enclosed at one end so that the shafts of golf clubs can be longitudinally retained in the bag. Traditional carrying systems or devices implemented as a means to transport such golf bags typically consist of a single strap that extends from an upper rim of the golf bag to a mid-point on the bag. The strap is typically loose and made of flexible material, wherein the golfer or the caddy is able to carry the golf bag by inserting one arm through the strap so that the strap extends across one shoulder. Consequently, the golf bag naturally rests against the golfer or caddy, depending upon the location and slack in the strap. Although simple in design, this single-strap design has endured through the years and is still very popular today, especially in connection with lower priced golf bags.

Although popular, several disadvantages and deficiencies are present in traditional carrying systems that are readily recognized by those individuals who carry such golf bags over a golf course. One such problem results from the fact that the entire weight of the golf clubs and bag, which typically ranges between twenty to thirty pounds, tires the shoulder of the user, especially when several rounds are being played. The weight of the golf bag also increases a likelihood of strain in the muscles of the neck, shoulders, and back. Such strain is often exacerbated by the bulk of the golf bag and its position relative to the user. Indeed, the weight, imbalance, and single strap design of traditionally manufactured golf bags can cause muscle soreness in the hips and lower back as well as

in the upper back and neck due to the fact that the center of gravity of the bag is offset with respect to the spine of the user. This is of particular concern to golfers who suffer from back problems.

Another problem associated with the traditional single strap golf bag design is the
5 resulting swing or rocking of the golf bag that repeatedly pounds the user over and over as he/she walks from hole to hole. This constant swinging or rocking motion is derived from and is in tune with the natural walking frequency of the user and is difficult to stabilize.

In recent years, the traditional single strap carrying system design has been
10 improved upon by designing two strap or multi-strap systems. These allow adjustable straps for two, three, or four point attachment to a golf bag. These enable transverse mounting of the golf bag on the back of the golfer. They further provide a broad surface with compliant material for comfort, and are often adapted to take the necessary shape to fit a given golfer.

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SUMMARY AND OBJECTS OF THE INVENTION

The present invention is a load bearing apparatus for facilitating manual transport of a load, such as a golf bag, luggage, camping equipment, backpack, and the like.

Specifically, certain embodiments of the present invention comprise a substantially rigid supporting structure for supporting the weight of a load and distributing such weight over the back and shoulders of a user. The supporting structure may be defined according to three structural elements, namely, a central rib, a stabilizing arm and an opposing arm.

The central rib provides the primary support for the weight of a load attached thereto.

Accordingly, the central rib is substantially planar such that the central rib may be

supported and balanced along the upper back of a user.

A stabilizing arm may extend from one end of the central rib to stabilize the load anteriorly over a shoulder of a user. An opposing arm may extend from an opposite end of the central rib anteriorly over a second shoulder of a user to counterbalance the stabilizing arm, such that the weight of the load is substantially evenly distributed over a

user. The dimensional relationship between the stabilizing and opposing arms may promote a specific transport arrangement with respect to a position of the load relative to a user. In this manner, balance between the load and a user may be facilitated according to the weight and bulk of the load. For example, where the load is a traditionally designed elongate golf bag, the length of an opposing arm may extend beyond the length of a stabilizing arm such that the golf bag is supported on a diagonal relative to a user.

A load bearing apparatus in accordance with the present invention may also incorporate a cushioning support on an underside surface of the supporting structure so as to facilitate a user's comfort. A support strap assembly may also be implemented in

accordance with the present invention to enable selective adjustment of the relationship between the load bearing apparatus and the load.

As the present invention provides a substantially rigid load bearing apparatus to provide independent support for a load transported by a user, the present invention avoids
5 the stress and strain common to users that utilize traditionally designed load bearing devices to transport a load.

An object of some embodiments of the present invention is to provide a load bearing apparatus capable of providing independent structural support for the weight of a load transported thereby.

10 Another object of some embodiments of the present invention is to provide a load bearing apparatus capable of substantially evenly distributing the weight and bulk of a load over a user.

A further object of some embodiments of the present invention is to provide a load bearing apparatus capable of quick and easy implementation by a user.

15 These and other features and advantages of the present invention will be set forth or will become more fully apparent in the description that follows. The features and advantages may be realized and obtained by means of the instruments and combinations particularly pointed out in the appended claims. Furthermore, the features and advantages of the invention may be learned by the practice of the invention or will be
20 obvious from the description, as set forth hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the manner in which the above-recited and other advantages and features of the invention are obtained, a more particular description of the invention briefly described above will be rendered by reference to specific embodiments thereof
5 which are illustrated in the appended drawings. Understanding that these drawings depict only typical embodiments of the invention and are not therefore to be considered limiting of its scope, the invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

Figure 1 illustrates a front view of an integrally formed load bearing device,
10 according to an exemplary embodiment of the present invention;

Figure 2 illustrates a rear view of a second embodiment of the load bearing device of Figure 1;

Figure 3 illustrates a rear view of a third embodiment of the load bearing device of Figure 1;

15 Figure 4 illustrates a front view of a fourth embodiment of a load bearing device in accordance with the present invention;

Figure 5 illustrates a side view of an opposing arm of a load bearing device in accordance with certain embodiments of the present invention;

Figure 6 illustrates a front view of a load bearing device in accordance with
20 certain embodiments of the present invention attached to an exemplary golf bag;

Figure 7 illustrates a load bearing device integrally formed with a load in accordance with certain embodiments of the present invention; and

Figure 8 details a method for facilitating manual transport of a load in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by the foregoing description. All changes that come within the meaning and range of equivalency of the claims are to be embraced within their scope.

The presently preferred embodiments of the invention will be best understood by reference to the drawings wherein like parts are designated by like numerals throughout.

As used in this specification, the term “load” refers to any type, style, design, size, or shape of item or load that may be physically carried by a user, as well as loads that are not necessarily intended to be carried by a user, but that may be so adapted or altered. A load may include any bag, container, carrier, sack, pack, or similar structure or device that may be physically carried, lugged, borne, supported, or held by a user, and that is capable of receiving and containing one or more objects therein. Additionally, a load may include any structure, device, system, machine, object, etc. that is capable of manual transport by a user. The term “mainstay backpack” refers to a backpack having an internal or external mainstay frame.

Referring now to Figure 1, a load bearing device 2 in accordance with certain embodiments of the present invention may comprise a substantially rigid structure integrally formed and comprising a substantially planar central rib 4, a stabilizing arm 6 extending substantially anteriorly from one end of the central rib 4, and an opposing arm 8 extending substantially anteriorly from an opposite end of the central rib 4, such that

the stabilizing and opposing arms 6 and 8 are substantially parallel one another. A load bearing device 2 in accordance with the present invention may also include attachment means 11 for releasably attaching the load bearing device to a cartable item, or load 34.

Unlike prior art load bearing devices that utilize or employ flexible or soft
5 shoulder straps or harnesses, the present load bearing device 2 comprises a rigid construction throughout its primary makeup that provides certain advantages and benefits that will be described herein. In one exemplary embodiment, a load bearing device 2 is constructed of plastic material and is formed using one of several manufacturing methods, such as injection molding, casting, etc. The load bearing device 2 may also be
10 formed of one or more other materials, such as metal, carbon graphite, or wood, but plastic or a plastic composite is preferred.

A central rib 4 may comprise a substantially horizontal planar bridge designed to extend dorsally across the lower neck/upper back area of a user. Alternatively, a central rib 4 may comprise other various shapes or configurational designs known to those in the
15 art, or may implement additional features. For example, as seen in Figures 2 and 3, a central rib 4 may comprise a dorsal brace portion 5 to provide a greater surface area by which to brace the central rib 4 substantially adjacent a user's back. Specifically, the dorsal brace portion 5 may extend perpendicularly from a central horizontal axis of the central rib 4 such that a bottom edge of the dorsal brace portion 5 may substantially
20 correspond to a user's mid- to upper back. A dorsal brace portion 5 may comprise a rectangle, triangle, or any other shape or configuration known to those in the art by which to further brace the central rib 4 against a user's back and thereby provide additional support for a load 34.

A central rib 4 provides the primary means by which a load bearing device 2 in accordance with the present invention may support and distribute the weight of a load 34. In addition, a central rib 4 enables a user to effect a dorsally supported position of the load bearing shoulder frame assembly of the present invention in a single movement, and, depending on the weight of the attached load, with a single hand. A central rib 4 also connects and secures a stabilizing arm 6 to an opposing arm 8 to provide stability and balance to a user. A central rib 4 is preferably rigid in construction and comprises a central horizontal axis extending therethrough. A central rib 4 may also provide means for adjusting the relative positions of a stabilizing arm 6 and opposing arm 8 attached thereto.

A stabilizing arm 6 comprises an ergonomic design that conforms or substantially conforms to the shoulder and neck area of a user to stabilize the load bearing device 2 of the present invention. In selected embodiments of the present invention, specific contours of a stabilizing arm 6 are defined by a dorsal segment 10 and an anterior segment 12 integral to the stabilizing arm 6. In such embodiments, each of the dorsal segment 10 and the anterior segment 12 function to improve the fit of and further brace the load bearing device 2 against a shoulder of a user so as to further limit the movement and displacement of the load bearing device 2 with respect to a user.

A stabilizing arm 6 may further comprise a cushioning support member 20 coupled to an underside of the stabilizing arm 6, and particularly positioned to accommodate the anterior and dorsal segments 12 and 10 of the stabilizing arm 6 to cushion an interface between the stabilizing arm 6 and a user. Of course, the size, thickness, stiffness, and arrangement of a cushioning support member 20 may vary, as

will be apparent to one of ordinary skill in the art. For example, a cushioning support member 20 may be removable to allow the user to clean or replace the member 20 as needed. In addition, the cushioning support member 20 may be manufactured in various sizes, colors, shapes, etc. to allow the user to customize the load bearing device 2 to some degree. A cushioning support member 20 may optionally comprise over-mold padding to reduce manufacturing costs and provide for a more unitary integrally formed structure.

An opposing arm 8 is also preferably rigid in makeup and ergonomically conforms to an opposing shoulder area of a user. An opposing arm 8 performs a function complementary to the stabilizing arm 6 such that the load bearing device 2 of the present invention may benefit from the use of two shoulders of a user to transport a load. Indeed, an opposing arm 8 both counterbalances the stabilizing arm 6 and acts with the stabilizing arm 6 to substantially evenly distribute a load over a user.

Some embodiments of an opposing arm 8, like its stabilizing arm 6 counterpart, may comprise a dorsal segment 13 and an anterior segment 14 extending anteriorly from the dorsal segment 13. Both dorsal segment 13 and anterior segment 14 coupled to an opposing arm 8 function in a manner similar to an anterior segment 12 and dorsal segment 10 coupled to a stabilizing arm 6.

Like the stabilizing arm 6, an opposing arm 8 may further comprise a cushioning support member 20 coupled to an underside of the opposing arm 8, and particularly implemented to cushion an interface between the anterior and dorsal segments 13 and 14 thereof and a user. Again, the size, thickness, stiffness, and arrangement of the cushioning support member 20 may vary, as will be apparent to one of ordinary skill in the art.

Referring now to Figure 4, although a stabilizing arm 6 and opposing arm 8 may be highly similar in shape and function, one presently preferred embodiment of an opposing arm 8 comprises a lateral extension 16 that extends from an anterior segment 14 to further stabilize and distribute a load with respect to a user. Particularly, a lateral
5 extension 16 may include an arcuate portion 18 to direct the load around the side and back of a user such that the portion of the load thereby supported may rest against the hip and/or lower back of a user. This embodiment of the present invention is particularly preferred where the load comprises a golf bag. Indeed, according to this embodiment of the present invention, the weight and bulk of the golf bag may be distributed substantially
10 diagonally against the back of a user so as to provide a large surface area over which such weight and bulk may be distributed to minimize strain on any particular muscle or group of muscles of a user.

In addition, although a stabilizing arm 6 and an opposing arm 8 may be substantially complimentary to one another in that they consist of essentially equivalent
15 but opposite structures, the present invention contemplates various design differences that may be incorporated into either of the stabilizing 6 or opposing arms 8, such as the dorsal and anterior segments incorporated into either or both of the arms 6 and 8, the lateral extension 16 optionally integrated into an opposing arm 8, each as described above, and other features or elements. As such, the present invention contemplates any design
20 configuration to be incorporated into stabilizing and opposing arms 6 and 8 as desired, and is thus not limited to those specifically recited and illustrated herein.

In addition, as the present invention is designed to ergonomically conform to a user, a load bearing device 2 in accordance with the present invention may be

manufactured in various sizes and shapes (e.g. different sizes and shapes for men and women, as well as for children) so a particular user can select the most ergonomically correct fit that would best allow stabilizing arm 6 and opposing arm 8 to conform to his or her particular body structure.

5 In another exemplary embodiment, instead of load bearing device 2 comprising a single, integrally formed structure, load bearing device 2 may comprise one or more separate and independent components that are adjustably coupled to one another to form or construct load bearing device 2. For example, each of the stabilizing arm 6, opposing arm 8, and central rib 4 may be adjustably coupled to one another. Such a design is
10 advantageous in that it allows the load bearing device 2 of the present invention to better accommodate various sized and shaped users, as discussed below. The means for adjusting 22 such components may be any means known to those in the art, such as matching threaded male and female portions, a ratchet system, a finger tightened screw, a quick release mechanism, an indexing assembly, or others.

15 Means for adjusting 22 may further comprise means for locking such components in place, such as by an index module, a quick release mechanism, or a threaded finger tightening screw, or by any other means known to those in the art.

Referring now to Figure 5, the present invention further features means for releasably coupling or attaching a load bearing device 2 in accordance with the present
20 invention to a cartable item or load 34, such as a golf bag. For example, a support strap assembly 28 may include at least one dorsal support strap 30 and at least one lateral support strap 32. Each strap may be adjusted as needed via an adjustment means, such as a buckle or other similar mechanism known to those in the art.

As depicted in Figures 5 and 6, a dorsal support strap 30 may extend from a dorsal segment of either or both of the stabilizing arm 6 and opposing arm 8, and/or from the central rib 4. A dorsal support strap 30 preferably attaches to a load 34 near or about its mid-section. A lateral support strap 32 may extend from an anterior segment of either or both of the stabilizing arm 6 and opposing arm 8, and/or from a lateral extension 16. A lateral support strap 32 preferably attaches to a load 34 near or about its upper and/or lower extremity. The present invention, however, contemplates various other attachment points or locations on a load 34 depending upon several factors, including load bulk and weight distribution, load size, the motion that will be experienced while transporting the load, and the like.

Attachment means 24 may comprise any known type of attachment device, system, mechanism, or material capable of securing dorsal strap 30 and lateral support strap 32 to a load 34 and/or to the load bearing device 2 of the present invention. The present invention also contemplates attachment means 24 that facilitate adjustment between two or more attachment points, or that may facilitate releasable attachment to multiple attachment points on the load 34 to accommodate varying a load distribution arrangement. As such, the means and locations of attachment recited herein should not be considered limiting in any way.

Dorsal support strap 30 and lateral support strap 32 may also comprise adjustable, but identified lengths that allow a load 34 to be oriented in the most efficient and comfortable way identified by a particular user. Preferably, these lengths allow a load 34 to be oriented transversally across the back of the user.

According to certain embodiments of the present invention, as depicted in Figure 6, a dorsal or lateral support strap 30 or 32 may have a first end that is looped through an aperture or a slot formed within the load bearing device 2. The first end may then be secured in place by means commonly known in the art, such as by sewing the end of the support strap to itself, or by providing some type of releasable attachment means, such as a buckle, or by coupling the first end directly to the load 34. Other attachment methods may also be utilized, such as attaching the first end of a strap 30 or 32 to the load bearing device 2 using a snap or rivet, or by any other means of mechanical attachment known to those in the art. Essentially, any means of attaching a support strap 30 or 32 to a load bearing device 2 and/or a load 34 is contemplated and intended to be within the scope of the present invention.

Although the foregoing discussion pertaining to the strap assembly focused on dorsal and lateral strap supports 30 and 32, respectively, the present invention contemplates several other strap arrangements, designs, configurations, supports, etc. to attach load bearing device 2 to a load 34. As such, the embodiments discussed above should not be construed as limiting in any way as one ordinarily skilled in the art will recognize other strap arrangements that may be incorporated into the present load bearing device 2.

Referring now to Figure 7, in addition to implementation in connection with an attachable load 34 such as a golf bag, the present invention load bearing device 2 may be implemented as an integral or attachable component of a smaller transportable load 34. This embodiment of the present invention is particularly useful in connection with a backpack 36. It is well known that many backpacks 36 and other similar-type bags

comprise a mainstay 38, such as an internal or external frame assembly, that functions to provide structural support to the backpack 36, as well as to provide additional carrying support to the backpack 36 in conjunction with the particular type of load bearing device 2 employed. The strap and harness assemblies traditionally employed in connection with backpacks 36, however, present many of the same problems and disadvantages as the traditional strap assemblies implemented in connection with golf bags, as previously described. The present invention therefore features a load bearing device 2 that may be integrated into a backpack 36 or other similar transportable load 34 to eliminate entirely the need for a strap assembly, or at least to eliminate the need for a primary strap assembly as currently employed in connection with prior art backpacks 36.

In a mainstay backpack 36, for example, a load bearing device 2 in accordance with the present invention may be integrally formed with or coupled to the mainstay 38 to provide a means for carrying the backpack 36 on the shoulders of the user. In another example, in a soft form backpack 36 having no internal or external frame assembly, the rigid load bearing device 2 may be coupled to or securely fastened to the backpack 36 using any means known to those skilled in the art. This concept allows the load bearing device 2 of the present invention to function as the sole means by which to support and distribute the weight of a backpack 36 over the shoulders of a user, thereby avoiding the problems of weight distribution and muscle strain typified by prior art strap assemblies. Also, as disclosed above with reference to Figures 1-6, the rigid load bearing device 2 of the present invention enables a user to effect a dorsally supported position of the device 2 and load in a single movement and with a single hand.

Like the load bearing device 2 implemented in connection with a load 34 such as a golf bag, a load bearing device 2 implemented in connection with a backpack 36 may comprise a central rib 4 that extends anteriorly into a stabilizing arm 6 at one end and into an opposing arm 8 at another. A load bearing device 2 incorporated into a backpack 36,
5 however, may comprise a central rib 4 of reduced dimensions relative to its golf bag implemented counterpart. In addition, a central rib 4 of the present embodiment of the present invention may be integrally formed with the mainstay 38 of the backpack 36, such that the load bearing device 2 of the present invention and the backpack 36 comprise a unitary structure.

10 Of course, a load bearing device 2 may also be coupled to the mainstay 38 rather than integrally formed therewith, using one or more attachment means 24. Attachment means 24 for attaching or coupling the load bearing device 2 to the mainstay 38 may comprise any of those known in the art.

A load bearing device 2 integrated or coupled to a backpack 36, as described and
15 claimed herein, comprises all of the components and features formerly described with reference to a golf bag or other load 34, including all recited and inherent embodiments thereof. A backpack 36 incorporating the load bearing device 2 of the present invention also functions in the manner previously described and taught herein.

Referring now to Figure 8, the present invention features a method for distributing
20 a weight of a load over a user, wherein the method comprises the steps of: (1) providing a substantially rigid should frame assembly to substantially conform to a user's shoulders and back 40; (2) attaching said substantially rigid shoulder frame assembly to a load 42; and (3) positioning said substantially rigid shoulder frame assembly over said shoulders

and said back of said user such that said weight of said load is substantially evenly distributed over said user 44.

The second step 42 of this particular method may further comprise coupling a support strap assembly to each of the substantially rigid shoulder frame assembly and the load 46. The third step 44 of a method in accordance with the present invention may comprise selectively adjusting the support strap assembly to customize a relationship between the substantially rigid shoulder frame assembly and the load according to the user's body type and individual preferences 48.

The present invention may be embodied in other specific forms without departing from its spirit of essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims, rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed and desired to be secured by Letters Patent is: